

**UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF PENNSYLVANIA**

IN RE: NATIONAL FOOTBALL LEAGUE:
PLAYERS' CONCUSSION
INJURY LITIGATION

No. 2:12-md-02323-AB
MDL No. 2323

Kevin Turner and Shawn Wooden,
*on behalf of themselves and
others similarly situated,*

Plaintiffs,

CIVIL ACTION NO: 14-cv-0029

v.

National Football League and
NFL Properties LLC,
successor-in-interest to
NFL Properties, Inc.,

Defendants.

Hon. Anita B. Brody

THIS DOCUMENT RELATES TO:
ALL ACTIONS

**DECLARATION OF
SCOTT RICHARD MILLIS, PhD**

I, SCOTT RICHARD MILLIS, PhD, hereby declare as follows:

1. If called as a witness, I could and would testify competently to the facts herein.

I. Qualifications

2. I am a board certified clinical psychologist and neuropsychologist.

Neuropsychology is a particular specialty of psychology that focuses on understanding how the structure and function of the brain influences our specific psychological processes, including cognitive functioning and behavior. I am board certified in three psychological specialties by the American Board of Professional Psychology: Clinical Neuropsychology, Clinical Psychology, and Rehabilitation Psychology. I am also a licensed psychologist in the state of Michigan. My complete *curriculum vitae* is attached

as Exhibit A. I highlight here some of my experience, research, and qualifications relevant to the opinions expressed below. I submit this declaration in support of the NFL Parties' Memorandum of Law in Support of Final Approval of the Class Action Settlement Agreement and in Response to Objections, and specifically to address the Test Battery and Scientific Impairment Criteria set forth in Exhibit 2 to the Settlement Agreement and objections regarding the Test Battery and Specific Impairment Criteria.

3. I obtained a Bachelor of Arts degree in Psychology from Oberlin College in 1978, and a Master of Arts degree in Clinical Psychology from the University of Cincinnati in 1982. I was awarded the Doctor of Philosophy degree in Clinical Psychology at the University of Cincinnati in 1984. I obtained a Master of Education degree in Educational Evaluation and Research from Wayne State University in 2003.

4. Currently, I am a tenured Professor in the Department of Physical Medicine and Rehabilitation at Wayne State University School of Medicine and Director of Research at the Detroit Medical Center's Rehabilitation Institute of Michigan. I have been on the faculty at Wayne State University since 2005.

5. I am also a Chartered Statistician with the British Royal Statistical Society and Chartered Scientist with the British Science Council, and a Professional Statistician ("PStat") accredited by the American Statistical Association. I am a Fellow in the American Psychological Association in three divisions: Division 5 – Evaluation, Measurement & Statistics; Division 22 – Rehabilitation Psychology; and Division 40 – Neuropsychology.

6. I previously served over a ten-year period as the statistician for the Traumatic Brain Injury National Data Center ("TBINDC"), a central resource for researchers and data collectors within the Traumatic Brain Injury Model Systems ("TBIMS") program. I am the former Project Co-Director of the TBINDC. I also previously served as the Chief of Neuropsychology at the DMC Rehabilitation Institute of Michigan from 1993 to 1999.

7. I have authored over 130 peer-reviewed publications in neurobehavioral outcome in central nervous system disorders and psychometrics relating to neuropsychology.

8. I serve and have served as a member of various editorial boards of peer-reviewed journals, as detailed in my CV. I currently am a member of the editorial board of the Journal of Head Trauma Rehabilitation and statistical reviewer for the Archives of Physical Medicine and Rehabilitation.

9. I maintain an active program of research in traumatic brain injury (“TBI”). My research has been supported by the United States Department of Defense, National Institutes of Health, and the United States Department of Education – National Institute on Disability and Rehabilitation Research. Some of my current grants are: (i) Treatment for Social Competence in Military Veterans, Service Members and Civilians with Traumatic Brain Injury; (ii) Prevention of Blast-Related Injuries; and (iii) Prevention of long-term consequences of mild traumatic brain injury.

10. In my role as a consulting expert for the NFL Parties in this litigation, I am being compensated for my time at my standard hourly rate.

II. Assignment

11. I was part of the group of neuropsychologists who, together with Class Counsel and Counsel for the NFL Parties, designed the Neuropsychological Test Battery and defined the Specific Impairment Criteria agreed to by the parties as part of the Settlement. I assisted the NFL Parties during their negotiations of these documents. I therefore am familiar with those documents, and the Test Battery and the Specific Impairment Criteria, specifically.

12. I have been asked to opine on the scientific validity and appropriateness of using the Test Battery and Specific Impairment Criteria for evaluating retired NFL football players in order to provide them with a baseline assessment and to

determine whether they have diagnoses of moderate cognitive impairment or mild to moderate dementia.

13. I also have reviewed certain declarations in support of objections to the approval of the Settlement. Specifically, I have reviewed declarations from Dr. Robert Stern and Drs. Brent Masel and Gregory O'Shanick. In portions of those declarations, they criticize aspects of the Test Battery and Specific Impairment Criteria. My responses to those criticisms are below.

14. As I explain in further detail below, in my opinion, the Test Battery and Specific Impairment Criteria are based on scientifically valid and widely used and accepted neuropsychological tests and principles. Therefore, the Test Battery and Specific Impairment Criteria are appropriate and reasonable to provide retired NFL football players with a baseline assessment and to determine whether they have diagnoses of moderate cognitive impairment or mild to moderate dementia.

III. Opinions

A. The Neuropsychological Test Battery and Specific Impairment Criteria Are Appropriate for the Evaluation of Retired NFL Football Players

15. As noted above, I was one of the neuropsychological experts who assisted the parties with their negotiations of the Test Battery and Specific Impairment Criteria, attached as Exhibit 2 to the Settlement Agreement.

16. The Test Battery described in Section 1 of Exhibit 2 to the Settlement Agreement is a battery of neuropsychological tests designed to provide retired NFL football players with a baseline assessment of their cognitive functions and to evaluate whether retired NFL football players are currently suffering from moderate cognitive impairment (Level 1 Neurocognitive Impairment), mild dementia (Level 1.5 Neurocognitive Impairment) or moderate dementia (Level 2 Neurocognitive

Impairment). The Test Battery includes a series of tests, each with a specific purpose, as described below.

17. First, the Advanced Clinical Solutions (“ACS”) Test of Premorbid Functioning (“TOPF”) will be administered to retired players to assess their premorbid intellectual functioning, *i.e.*, the functioning of the player before the onset of any illness or disease. Understanding a player’s premorbid—or essentially, baseline—functioning, as described in more detail below, is essential to assessing whether there has been a decline in that individual’s functioning. The TOPF is a well-accepted test in the scientific and medical communities to measure premorbid functioning. *See, e.g.*, James A. Holdnack et al., *Predicting Premorbid Ability for WAIS-IV, WMS-IV and WASI-II*, in *Advanced Clinical Interpretation: WAIS-IV, WMS-IV, and ACS* 217, 217-78 (Academic Press 2013).

18. Second, the Test Battery includes a series of tests that assess an individual’s current level of functioning in five areas, known as “cognitive domains”: learning and memory, complex attention, executive function, language, and spatial-perceptual functioning. Each test is well accepted and scientifically validated in the scientific and medical communities. Additionally, impairments in these domains are well accepted and scientifically valid for diagnosing moderate cognitive impairment or dementia. *See* Glenn E. Smith & Mark W. Bondi, *Mild Cognitive Impairment and Dementia: Definitions, Diagnosis, and Treatment* (Oxford Univ. Press Inc., new ed. 2013) (“Smith and Bondi 2013”).

19. Third, the Test Battery includes two neuropsychiatric tests, which assess emotional functioning and aspects of personality: the MMPI-2RF and the Mini International Neuropsychiatric Interview. Although these tests will not be used to make diagnoses of moderate cognitive impairment or dementia, they are valuable tools to provide clinicians with a full clinical profile of the retired players by allowing clinicians to understand whether the players are experiencing any neuropsychiatric symptoms. This

clinical profile will allow the clinicians to provide the retired players and their families with a full picture of each player's symptoms and also will assist in determining supplemental benefits for qualified players under the BAP. For example, individuals suffering from moderate cognitive impairment or dementia, can experience depression, anxiety, or other emotional difficulties. To be clear, depression is not part of the diagnostic and clinical profile of moderate cognitive impairment or dementia, but depression can occur in individuals with those conditions. It is thus useful to know if a player is experiencing depression or other emotional disorders both in advising a player and his family on the results of his examination, and in determining treatment options if the player has moderate cognitive impairment.

20. Fourth, the Test Battery contains a series of "validity" measures. Validity testing enables a clinician to assess whether the patient is trying to do his best on the test or if he is trying to appear to be impaired when he is not. Validity testing is a well-recognized and accepted part of testing for cognitive impairment. Some of these measures are embedded in the neuropsychological tests described above. In other words, certain neuropsychological tests that test for impairment in a particular domain include internal validity tests to measure effort. Two of the performance validity measures are freestanding. In other words, they are not embedded in other tests, but are given as freestanding tests to assess effort and determine whether the test results are valid. When an individual attempts to appear to be impaired when he is not, it is known as malingering. All of the validity tests in the Test Battery—embedded and freestanding—are well accepted and scientifically valid for assessing validity in individuals being tested for moderate cognitive impairment or dementia. See Glenn J. Larrabee, *Assessment of Malingered Neuropsychological Deficits* (Oxford Univ. Press, Inc., new ed. 2007) ("Larrabee 2007"). Exhibit 2 contains a detailed explanation of how practitioners should assess validity, and I address specific criticisms of the validity testing in the Test Battery below.

21. The Specific Impairment Criteria described in Section 4 of Exhibit 2 to the Settlement Agreement sets forth the levels that must be met in the Test Battery for a player to be diagnosed with moderate cognitive impairment or dementia, and therefore to be potentially eligible for certain benefits under the Settlement. The thresholds differ depending on the individual player's premorbid functioning (intellectual level or "IQ"). Players with below average estimated functioning (estimated IQ below 90) must have more low test scores than players with average estimated functioning (estimated IQ between 90 and 109). Similarly, players with average estimated functioning in turn must have more low test scores than players with above average estimated functioning (estimated IQ above 110). This methodology and the thresholds were based on empirical data and research that has been accepted within the scientific and medical communities. See, e.g., Brian L. Brooks et al., *Developments in Neuropsychological Assessment: Refining Psychometric and Clinical Interpretive Methods*, 50 Canadian Psychol. 196 (2009) ("Brooks Study"); Iverson, G., Brooks, B. & Holdnack, J., *Evidence-Based Neuropsychological Assessment Following Work-Related Injury*, in *Neuropsychological Assessment of Work-Related Injury* 360, 360-400 (Shane S. Bush & Grant L. Iverson eds., 2012) ("Holdnack Study"); Grant L. Iverson & Brian L. Brooks, *Improving Accuracy for Identifying Cognitive Impairment*, in *The Little Black Book of Neuropsychology: A Syndrome-Based Approach* 923, 923-950 (Mike R. Schoenberg & James G. Scott eds., 2011) ("Iverson Study").

22. Certain other findings established in the scientific community were also incorporated into the definitions of the thresholds. For instance, when examining neuropsychological data across a wide range of tests, the Iverson Study observed the following: (1) low test scores in neuropsychological tests are common even in healthy people; (2) low test scores depend on where the cutoff score is set to define "impairment"; (3) low test scores vary by the total number of tests given; (4) low test scores are related to the demographic characteristics of the patient; and (5) low test scores

vary by level of intelligence. *See* Iverson Study at 924. The thresholds set forth in the Specific Impairment Criteria establish an objective method for evaluating the cognitive decline of retired players compared to their expected baseline cognitive functioning, taking into account these observed findings. This same methodology for establishing impairment thresholds has been applied to the test battery designed and used by Dr. Stern, one of the doctors who supports certain of the objections, the Neuropsychological Test Battery (“NAB”). *See id.*

B. Responses to Objections

23. In support of certain objections, Dr. Stern raises various concerns regarding the Test Battery and the Specific Impairment Criteria. Drs. Masel and O’Shanick also raise concerns regarding the Test Battery and the Specific Impairment Criteria. I will address each of those concerns below.

i. Dr. Stern’s Criticisms of the Test Battery are Incorrect

24. In his declaration, Dr. Robert Stern asserts that the Test Battery “is not appropriate for evaluating whether retired professional football players have neurodegenerative diseases such as CTE or Alzheimer’s disease. Rather, it is appropriate only for the evaluation of a younger traumatic brain injury patient.” (Stern Decl. ¶ 43.) This is not an accurate assessment, and Dr. Stern cites no medical or neuropsychological literature to support his argument. All of the tests in the Test Battery have normative data covering the life span. In other words, all of the tests in the Test Battery allow neuropsychologists to compare a patient’s scores against his expected scores given his age, race, education, and other relevant factors. This is true for older patients and younger patients. For example, Wechsler scales are designed to be used with persons from age 16 years to 90 years. Moreover, many of the tests in the Test Battery are frequently used in the evaluation of mild cognitive impairment and dementia. *See* Smith and Bondi 2013.

25. Dr. Stern's assertion that the battery is not consistent "with that given by the large majority of neuropsychologists who specialize in neurogenerative disease," (Stern Decl. ¶ 43), is also without scientific or medical support. Neuropsychologists who specialize in neurogenerative disease regularly use the tests in the Test Battery in clinical practice and in research to assess cognitive impairment and dementia. A survey of 747 North American, doctoral-level psychologists affiliated with Division 40 of the American Psychological Association, the National Academy of Neuropsychology, or the International Neuropsychological Society shows that the tests included in the Test Battery are among the most widely used neuropsychological tests across all patient groups. *See* Laura A. Rabin et al., *Assessment Practices of Clinical Neuropsychologists in the United States and Canada: A Survey of INS, NAN and APA Division 40 Members*, 20 Archives Clinical Neuropsychol. 33 (2005) ("Rabin Study").

26. Dr. Stern further argues that the Test Battery is inappropriate because it will take approximately five hours to administer the test without any breaks, and some players with dementia will therefore be unable to complete the tests. (*See* Stern Decl. ¶ 44.) While Dr. Stern accurately characterizes the length of time it will take to administer the Test Battery, his conclusion does not follow from this fact. The kind of properly trained and credentialed neuropsychologists¹ who will be administering the Test Battery under the terms of the Settlement Agreement are trained and well-positioned to administer tests to players suffering from neurocognitive impairment, including dementia. In addition, most of the tests in the Test Battery have "stopping rules" that allow the examiner to discontinue or shorten the length of the test when the patient fails to complete items correctly.

¹ The parties have required that neuropsychologists who evaluate players must be certified by the American Board of Professional Psychology or the American Board of Clinical Neuropsychology, a member board of the American Board of Professional Psychology, in Clinical Neuropsychology. (*See* Settlement Agreement § 5.2.) This requirement is appropriate in my view.

27. Dr. Stern next criticizes the “Mental Health” measures that are included in the Test Battery. (*Id.* ¶ 45.) Here, he is complaining about the two neuropsychiatric tests included in the Test Battery: the MMPI-2RF and the Mini International Neuropsychiatric Interview. Specifically, he faults the Test Battery for not assessing areas of “impulsivity, rage, and aggression.” (*Id.*) But Dr. Stern’s argument assumes that the Settlement Agreement compensates mood and behavioral symptoms allegedly associated with CTE, which is not the case. Dr. Stern’s argument also assumes that there is a clear diagnostic profile of CTE that is accepted by the scientific community and that includes mood and behavioral symptoms. In my opinion, the current scientific evidence does not support that assumption. The science regarding CTE is just beginning and there have been no long-term or prospective studies regarding CTE. *See* H.S. Wortzel, L.A. Brenne & D.B. Arciniegas, *Traumatic Brain Injury and Chronic Traumatic Encephalopathy: A Forensic Neuropsychiatric Perspective*, 31 Behav. Sci. & L. 721, 727 (2013) (“Wortzel Study”) (assessing current scientific literature on CTE and concluding that “[t]his literature failed to report a clear or consistently applied method, let alone a standardized diagnostic measure, used to identify neuropsychiatric, medical, and/or toxic conditions in the CTE studies performed to date”). Thus, there is no scientifically-accepted diagnostic profile for CTE. The role of the mental health measures in the Test Battery, as discussed, is to allow the diagnosing physicians to have a full picture of players’ impairment. This will allow the diagnosing physicians to recommend further testing and/or treatment in the event a player qualifies for supplemental benefits under the Baseline Assessment Program. It also will allow the diagnosing physicians to provide the players and their families with a full assessment of the players’ impairment. In this sense, the Testing Battery comprehensively covers the symptoms identified by Dr. Stern on the mood and behavioral side. Finally, the MMPI-2RF and the Mini International Neuropsychiatric Interview are well-established tests used

regularly by clinicians to assess psychiatric symptoms in individuals with cognitive impairment or dementia. *See, e.g.*, Rabin Study at 33-65.

28. Dr. Stern also criticizes the use of the performance validity testing in the Test Battery, raising the concern that some players might be inaccurately classified as showing poor effort in completing the tests due to cognitive impairment. (*See* Dr. Stern Decl. ¶ 46.) He cites two studies in support of this contention. (*Id.* citing K.E. Bortnik, *Performance on Standard Indexes of Effort Among Patients with Dementia*, 20 Applied Neuropsychol. Adult 233 (2013), and G.L. Teichner & M.T. Wagner, *The Test of Memory Malingering (TOMM): Normative Data from Cognitively Intact, Cognitively Impaired, and Elderly Patients with Dementia*, 19 Archives Clinical Neuropsychol. 455, 455-464 (2004).) Unfortunately, both of those studies examined a limited range of performance validity measures, some of which are now obsolete. It must be stressed that performance validity testing is a fundamental tenet of neuropsychological testing. *See* R.L. Heilbronner et al., *American Academy of Clinical Neuropsychology Consensus Conference Statement on the Neuropsychological Assessment of Effort, Response Bias, and Malingering*, 23 Clinical Neuropsychol. 1093 (2009) (“Heilbronner Study”). Performance validity tests essentially help the clinician answer the question, “Can I trust the data from the rest of my neuropsychological tests?” Without validity testing, the results of the tests would be unreliable and a clinician would be unable to make a proper diagnosis.

29. In addition, the importance of validity testing is heightened in a litigation setting where players are eligible for significant monetary awards. That is, neuropsychological tests can only provide valid and reliable data if the examinee performs the tests to his best effort. It is relatively easy to under-perform on neuropsychological tests, which will then produce artificially low scores—making the examinee appear impaired when he is not.

30. Despite the importance of validity testing, certain safeguards have been built into the Test Battery to increase the accuracy of the performance validity tests and to eliminate the specific concern raised by Dr. Stern: that a player will be disqualified based on a false positive diagnostic error. First, no single test score will result in disqualification of test results. Rather, each practitioner will be required to complete a checklist of validity criteria as set forth in *Slick et al.* 1999, and revised in 2013 for every player examined in order to determine whether the player's test data is a valid reflection of his optimal level of neurocognitive functioning. The *Slick* criteria are specifically designed to avoid a false positive in testing results. Like all of the tests included in the Test Battery, the *Slick* criteria are well-validated and used by clinicians on a daily basis to assess the consistency of results across neuropsychological tests in order to determine the validity of those results. A second safeguard specifies that, "a Retired NFL Football Player's failure on two or more effort tests may result in the Retired NFL Football Player's test results being subjected to independent review, or result in a need for supplemental testing of the Retired NFL Football Player." (Settlement Agreement Ex. B-2 at 3.) In other words, a single failed validity test—or even two—does not automatically disqualify a player's testing results. Rather, a failed test raises a concern with the test results that must be fully assessed by the clinician.

ii. Dr. Stern's Criticisms of the Specific Impairment Criteria and Injury Definitions are Incorrect

31. In addition to criticizing the diagnostic tests in the Test Battery, Dr. Stern also criticizes the thresholds and functional impairment standards set forth in the Injury Definitions and Specific Impairment Criteria. (See Stern Decl. ¶¶ 47-53.) In other words, Dr. Stern asserts that the thresholds for diagnoses that make a player eligible for an award are too high. Dr. Stern begins his criticism with a description of the functional impairment criteria used in the Settlement which are necessary to obtain a diagnosis of Level 1.5 Neurocognitive Impairment (mild dementia) or Level 2

Neurocognitive Impairment (moderate dementia). (*Id.* ¶ 47.) He describes the criteria and implies that they are too severe, without actually saying so.

32. In fact, the criteria used for functional impairment are directly supported by relevant medical and neuropsychological literature. The functional impairment criteria are taken directly from the Clinical Dementia Rating (“CDR”) scale set forth by the National Alzheimer’s Coordinating Center. The CDR scale is a highly validated scale for functional impairment associated with dementia. *See Keith Wesnes, Clinical Trials in Which the CDR System Has Been Employed to Detect Enhancements in Cognitive Function* (Feb. 2013), available at <http://bracketglobal.com/sites/default/files/ISCTM-Spring-4.pdf> (stating that CDR has been used in approximately 1,400 clinical trials). The agreement requires a player to demonstrate functional impairment consistent with mild dementia in the CDR to be eligible for a diagnosis of mild dementia in the settlement. Similarly, the agreement requires a player to demonstrate functional impairment consistent with moderate dementia in the CDR to be eligible for a diagnosis of moderate dementia in the Settlement.

33. Dr. Stern next criticizes the “algorithm” set forth in the Test Battery. (Stern Decl. ¶ 48.) In general, Dr. Stern argues that the algorithm is arbitrary and unsupported by science. That is not the case. The algorithm was based on extensive research performed by Dr. Grant Iverson—one of Class Counsel’s consultants. Iverson’s algorithm is empirically based and transparent in its rationale. *See, e.g., Brooks Study; Iverson Study; Holdnack Study.*

34. Dr. Stern’s final criticism of the Specific Impairment Criteria, namely that the Specific Impairment Criteria should not incorporate individual baseline functioning as a factor, is invalid because it misconstrues the applicable science. (See Stern Decl. ¶ 53.) Cognitive impairment cannot be measured on a population basis. Cognitive impairment is unique to every individual. Thus, it is a basic principle of

neuropsychology that an individual's pre-impairment functioning must be considered in assessing whether that individual is currently suffering from impairment of a certain severity. *See, e.g.*, Brooks Study; Iverson Study; Holdnack Study. This is the entire point of a baseline assessment—to understand the individual's baseline functioning so that future testing can be measured against that individual's baseline results. In other words, smaller deficits in functioning may be consistent with cognitive impairment or dementia in individuals with above-average IQs, but not in individuals with below-average IQs. As a general matter, individuals with below-average IQs are much more likely to obtain low test scores, even in the absence of cognitive impairment. Dr. Stern's suggestion that premorbid IQ or intelligence should not be considered in the neuropsychological Testing Battery in the Settlement is without scientific support.

iii. Drs. Masel and O'Shanicks' Criticisms of the Test Battery are Similarly Baseless

35. Drs. Masel and O'Shanick, two other doctors who have submitted declarations criticizing aspect of the Settlement, criticize the Settlement's failure to take functional impairment into account in determining whether a player qualifies for Level 1.5 or Level 2 Neurocognitive Impairment. (*See* Masel/O'Shanick Decl. ¶ 12.) Drs. Masel and O'Shanick also criticize the way in which "moderate cognitive decline is defined." (*Id.* ¶ 15.) They argue that the Settlement should include a "more holistic, human-based, and less linguistically reliant" method for evaluating players and that the thresholds associated with Level 1 Neurocognitive Impairment are too high. (*Id.* ¶ 12.) However, Drs. Masel and O'Shanick appear to misunderstand the terms of the Settlement. First, the definitions of the Qualifying Diagnoses for Level 1.5 and Level 2 Neurocognitive Impairment do require proof of functional impairment. Such proof must be consistent with the requisite proof established in the CDR and shall be corroborated by documentary evidence. It is standard practice for neuropsychologists to seek objective evidence of functional impairment in clinical practice. Second, the definitions of Levels

1, 1.5, and 2 Neurocognitive Impairment require impairment in two or more cognitive domains (out of five). This requirement, particularly given the litigation context, is consistent with the level of impairment one would expect to see in individuals who suffer from moderate cognitive impairment or dementia, respectively, as opposed to mild cognitive impairment, which is not compensated under the Settlement. *See generally* Michael A. McCrea, *Mild Traumatic Brain Injury and Postconcussion Syndrome: The New Evidence Base for Diagnosis and Treatment* (Oxford Univ. Inc., new ed. 2007) (“McCrea 2007”).

36. Drs. Masel and O’Shanick also claim that the “neurobehavioral consequences of mild TBI are significant,” (Masel/O’Shanick Decl. ¶ 10), and that neurobehavioral symptoms should be part of the Test Battery and Specific Impairment Criteria. But Drs. Masel and O’Shanick ignore the fact that neurobehavioral symptoms are not compensated under the Settlement. They also do not provide any empirical evidence to support this opinion, and the scientific literature disputes this claim. In his review of the scientific literature, Michael A. McCrea found that in the typical course of recovery for mild traumatic brain injury patients they returned to their normal occupational, social, and independent functioning within days to weeks following injury. *See generally* McCrea 2007. There was no indication of permanent impairment on neuropsychological testing by three months following injury in the vast majority of cases. *See id.*

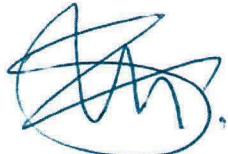
37. Finally, Drs. Masel and O’Shanick criticize the use of the Advanced Clinical Solutions Test of Premorbid Function (“TOPF”). They characterize the TOPF as a “word reading test” and argue that the test is therefore unreliable in assessing premorbid (or baseline) functioning. Actually, their argument that the TOPF is a “word reading test” is only partly correct. The TOPF uses two methods to predict premorbid intellectual ability (i.e., the likely IQ level or score prior to injury or illness), namely, performance data (reading and pronunciation of words) and the demographic

data model (e.g., age, education, gender). The concept behind the reading test for predicting premorbid IQ is that reading skills are less susceptible to decline following brain injury and have been found to be predictive of intellectual functioning. Combinations of different demographic variables have been found to correlate with IQ and are not affected by brain injury. The TOPF combines the best of both worlds by using both methods. Studies have shown that the TOPF has a very high reliability in all age groups, ranging from .96 to .99. It has a reliability of .98 in a traumatic brain injury group. *See Holdnack and Schoenberg Study at 266-69.*

I declare under penalty of perjury that the foregoing is true and correct.

Dated: Detroit, Michigan

November 11, 2014



Scott Richard Millis, PhD

EXHIBIT A

Date of Preparation: April 4, 2014



SCOTT RICHARD MILLIS, PhD, ABPP, CStat, PStat

OFFICE ADDRESS: Department of Physical Medicine & Rehabilitation
Wayne State University School of Medicine
261 Mack Blvd
Detroit, MI 48201
Tel: 313-993-8085
Fax: 313-745-9854
Email: smillis@med.wayne.edu

EDUCATION

Graduate

Montclair State University, Montclair, NJ, 2001-2004; Major: Statistics

Master of Education (M.Ed.)

Wayne State University, Detroit, MI, 2003; Major: Evaluation and Research

Doctor of Philosophy (Ph.D.)

University of Cincinnati, Cincinnati, OH, 1984; Major: Clinical Psychology (*APA-accredited*)

Master of Arts (M.A.)

University of Cincinnati, Cincinnati, OH, 1982; Major: Clinical Psychology (*APA-accredited*)

Baccalaureate

Bachelor of Arts (A.B.)

Oberlin College, Oberlin, OH, 1978; Major: Psychology

POSTGRADUATE TRAINING

Cincinnati Veterans Affairs Medical Center (*APA-Accredited Predoctoral Internship in Clinical Psychology*), Sept 1983 – Sept 1984

Oberlin College, Psychological Services, Sept 1984 – July 1985

Cleveland Center for Cognitive Therapy, Jan – May 1985

Cincinnati Neurological Associates, July 1985 – May 1987

FACULTY APPOINTMENTS

- 2008 – Present Associate, Department of Emergency Medicine, Wayne State University School of Medicine
- 2005 – Present Professor (with tenure), Department of Physical Medicine and Rehabilitation, Wayne State University School of Medicine
- 2003 – 2005 Professor, Department of Physical Medicine and Rehabilitation
University of Medicine and Dentistry of New Jersey – New Jersey Medical School
- 2000 – 2003 Associate Professor, Department of Physical Medicine and Rehabilitation
University of Medicine and Dentistry of New Jersey – New Jersey Medical School
- 1996 – 1999 Associate Professor, Department of Physical Medicine and Rehabilitation
Wayne State University School of Medicine
- 1996 – 1999 Adjunct Associate Professor, Department of Psychology
Wayne State University
- 1993 – 1996 Adjunct Assistant Professor, Department of Psychology
Wayne State University
- 1991 – 1999 Associate Graduate Faculty – Wayne State University
- 1990 – 1996 Assistant Professor, Department of Physical Medicine and Rehabilitation
Wayne State University School of Medicine
- 1988 – 1990 Assistant Professor, Department of Physical Medicine and Rehabilitation
University of Cincinnati College of Medicine

HOSPITAL OR OTHER PROFESSIONAL APPOINTMENTS

- 2010 – Present Rehabilitation Institute of Michigan – Co-Chair, Patient Care Services Research / Evidence Based Council
- 2005 – Present Rehabilitation Institute of Michigan – Director of Research
- 1999 – 2005 Kessler Medical Rehabilitation Research & Education Corporation –

Senior Research Scientist & Director, Office of Clinical Trials

- 1993 – 1999 Rehabilitation Institute of Michigan, Department of Rehabilitation Psychology and Neuropsychology – Chief
- 1990 – 1993 Rehabilitation Institute of Michigan, Department of Rehabilitation Psychology and Neuropsychology - Associate Director
- 1988 – 1990 University of Cincinnati Medical Center, Brain Injury Program Department of PM&R - Assistant Director

MAJOR PROFESSIONAL SOCIETIES

American Psychological Association – Fellow (01/2002)

American Psychological Association – Member (07/1985 – 01/01/2002)

American Statistical Association – Member (12/1994)

Michigan Psychological Association – Member (05/2005)

Public Responsibility in Medicine & Research – Member (06/2010)

Royal Statistical Society – Fellow (11/2006)

PROFESSIONAL LICENSURE

Licensed Psychologist (007792), State of Michigan

Certificate of Professional Qualification in Psychology (CPQ 9)

BOARD CERTIFICATION

Professional Statistician (PStat), American Statistical Association, 2010

Chartered Scientist (CSci), The Science Council (UK), 2009

Chartered Statistician (CStat), Royal Statistical Society (UK), 2007

Board Certified in Clinical Psychology (6279), American Board of Professional Psychology, 2007

Board Certified in Rehabilitation Psychology (4919), American Board of Professional Psychology, 1997

Board Certified in Clinical Neuropsychology (4176), American Board of Professional Psychology, 1992

HONORS/AWARDS

Physician / Faculty of the Year – Rehabilitation Institute of Michigan (2006)

Fellow, American Psychological Association (Div. 5 – Evaluation, Measurement, and Statistics) (2005)

Fellow, American Psychological Association (Div. 22 – Rehabilitation Psychology) (2004)

Fellow, American Psychological Association (Div. 40 – Clinical Neuropsychology) (2002)

Fellow, National Academy of Neuropsychology (1996)

Ohio Scholar - Oberlin College (1974)

SERVICE

1. Wayne State University

Associate Chair – Research (2005 – present)

Departmental Faculty Development Liaison – Member (2012 – present)

Institutional Review Board – Behavioral (B3) Institutional Review Board – *Chair* (2010 – 2013)

Department Review Committee – Department of Physical Medicine & Rehabilitation (2008 – 2009)

Institutional Review Board – Medical (PH1) Institutional Review Board (2008 – 2010)

Clinical and Translational Science Awards Committee – Biostatistics, Study Design, and Epidemiology Work Group (2007 – 2011)

Institutional Review Board – Behavioral (B3) Institutional Review Board - Member (2006 – 2010)

2. Affiliated Medical Organizations

Co-Chair – Magnet Program – DMC – Rehabilitation Institute of Michigan (2011 – present)

Senior Management Group – DMC – Rehabilitation Institute of Michigan (2008 – present)

Chair – Ethics Committee – DMC – Rehabilitation Institute of Michigan (2007 - present)

Member – Ethics Committee – DMC – Rehabilitation Institute of Michigan (2006 – 2007)

Director of Research – DMC – Rehabilitation Institute of Michigan (2005 – present)

3. National Boards and Committees

Past President – Detroit Chapter – American Statistical Association (2011 – 2012)

President – Detroit Chapter – American Statistical Association (2010 – 2011)

Vice President – Detroit Chapter – American Statistical Association (2009 – 2010)

Panel Member – Neuropsychology Subcommittee – Advancing Integrated Research in Psychological Health and Traumatic Brain Injury: Common Data Elements – National Institutes of Health, US Department of Defense, & National Institute on Disability and Rehabilitation Research (2009)

Subcommittee Chair – Research Evidence and Scientific Issues – American Academy of Clinical Neuropsychology Consensus Conference Statement on the Neuropsychological Assessment of Effort, Response Bias, and Malingering (2008 – 2009)

Advisory Panel Member – Wechsler Adult Intelligence Scale – IV and Wechsler Memory Scale – IV (2006 – 2009)

Expert Panel Member – NIMH – Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) (2003)

Treasurer – Psychology Disciplinary Interest Group, American Congress of Rehabilitation Medicine (1995 – 1996)

Member Representative – Association of Postdoctoral Programs in Clinical Neuropsychology (1993 – 1999)

Work Sample Reviewer – American Board of Clinical Neuropsychology (1992 – present)

Surveyor – Commission on Accreditation of Rehabilitation Facilities (1990 – 1994)

4. Consulting

Neuropsychology Consultant – Banyan Biomarkers, Inc. (2012 – present)

Statistical Consultant – Archives of Physical Medicine & Rehabilitation (2008 – present)

Statistical Consultant – Neurorecovery, Inc. (2006 – 2008)

Statistical Consultant – Pfizer, Inc. (2006)

Psychometric & Measurement Consultant – Harcourt Assessments (2005 – 2009)

Neuropsychology Consultant – Prudential Insurance Company of America (2004 – 2009)

5. Grant review panels

National Institute on Disability and Rehabilitation Research – US Department of Education, (2007 – 2008)

US Department of Defense (2008)

6. Service for Peer-Reviewed Journals

Member, Editorial Board, Journal of Head Trauma Rehabilitation (1992 – 1998, 2011-present)

Statistical Consultant, Archives of Physical Medicine and Rehabilitation (2009 – present)

Consulting Editor, Journal of the International Neuropsychological Society (2009 – 2011)

Member, Editorial Board, Assessment (2007 – 2012)

Member, Editorial Board, Journal of Spinal Cord Medicine (2000 – 2005)

Consulting Editor, Journal of Clinical and Experimental Neuropsychology (1999 - 2006)

Member, Editorial Board, Journal of Forensic Neuropsychology (1997 - 2006)

Consulting Editor, The Clinical Neuropsychologist (1996 - 2010)

Member, Editorial Board, Advances in Medical Psychotherapy (1993 - 1999)

TEACHING

1. Years at Wayne State

Department of Physical Medicine & Rehabilitation (1990 – 1999; 2005 - present):
Clinical teaching at the Rehabilitation Institute of Michigan (PM&R residents, medical fellows in traumatic brain injury rehabilitation, postdoctoral neuropsychology fellows, predoctoral psychology trainees, allied health students); residency education program and continuing

medical education program; Neuropsychology Postdoctoral Fellowship; statistical and research design consultant.

Department of Emergency Medicine: Statistical consultant.

Department of Neurology: Statistical consultant.

2. Years at Other Colleges/Universities

University of Medicine and Dentistry of New Jersey – New Jersey Medical School (1999 – present)

Statistical consultation to residents in UMDNJ Physical Medicine and Rehabilitation residency; instructor for Research Design course for residents.

University of Cincinnati College of Medicine (1988 - 1990):

Clinical teaching in the Department of Physical Medicine & Rehabilitation (PM&R residents, psychological graduate students, allied health students).

3. Essays/Theses/Dissertations Directed

Greene, H. The psychometric properties and clinical utility of the Coping Inventory for Stressful Situations (CISS) in individuals with traumatic brain injury. Masters thesis, Wayne State University, Department of Psychology, 2013.

Bashem, J. Detecting suboptimal effort in traumatic brain injury assessment. Masters thesis, Wayne State University, Department of Psychology, 2012.

Olm-Madden, T. A reliable approach to psychological assessment using cognitive test batteries. External examiner: Doctoral dissertation, University of Southern Queensland, Australia, Department of Psychology, 2008.

Taneja, C. Utility of the CVLT-II Short Form in differentiating between subgroups of stroke. External examiner: Doctoral dissertation, University of Windsor, Canada, Department of Psychology, 2005.

Berry, D. Neuropsychological test norms based on multiple samples: Effects of demographic variables, sample characteristics, and substance disorders. Doctoral dissertation, Rutgers, The State University of New Jersey, Department of Psychology, 2004.

Alverzo, J. Orientation and the onset of neurological complications among brain injury and stroke patients. Doctoral dissertation. New York University, The Steinhardt School of Education, 2004.

Murji, S. Clinical subtypes in HIV-1 infection. External examiner: Doctoral dissertation, University of Windsor, Canada, Department of Psychology, 2001.

Coleman, R. Awareness and fitness to drive in a TBI population. Doctoral dissertation, Wayne State University, Department of Psychology, 2000.

Stogner, B. L. Prediction of postconcussion syndrome from neuropsychological and personality variables. Doctoral dissertation, Wayne State University, Department of Psychology, 1999.

Ross, S. R. Clarifying the construct of schizotypy: Variability as a marker of subtype. Doctoral dissertation, Wayne State University, Department of Psychology, 1998.

Anderson, P. Memory functioning in children and adolescents with Williams Syndrome. External examiner: Doctoral dissertation, University of Windsor, Canada, Department of Psychology, 1997.

Coleman, R. Effects of coaching on the detection of malingering on the California Verbal Learning Test: An analog study of malingered head injury. Masters thesis, Wayne State University, Department of Psychology, 1997

Nanna, M. J. Comparative power properties of Hotelling's T^2 versus the rank transformation test using real pretest/posttest Likert scale data. Doctoral dissertation, Wayne State University, College of Education, Theoretical and Behavioral Foundations, Educational Evaluation and Research, 1997.

Hanks, R. Ecological validity of measures of executive functioning in a traumatically brain-injured population. Doctoral dissertation, Wayne State University, Department of Psychology, 1996.

Johnson, P. Standardization of the Visual Object and Space Perception Battery (VOSP) on an American sample. Masters thesis, Wayne State University, Department of Psychology, 1996.

Gola, T. Investigation of the validity of common methods to detect simulation in neuropsychological examination of mild traumatic brain injury. Doctoral dissertation, Wayne State University, College of Education, Theoretical and Behavioral Foundations 1994.

Czarnota, M. Information processing speed and its relation to attention in a traumatic brain injury population. Doctoral dissertation, Wayne State University, Department of Psychology, 1993.

RESEARCH, CONTRACTS, & OTHER FUNDING

Active National Grants

DoD/CDMRP PT100068/W81XWH-11-1-0635 (PI: C Harrison-Felix)
08/01/2011 – 07/31/2015

Craig Hospital
Treatment for Social Competence in Military Veterans, Service Members and Civilians with Traumatic Brain Injury

Role: Principal Investigator: 5% - \$292,134 (2012)

DoD/USMRAA/W81XWH-12-2-0038 (PI: A King)

08/01/2012 – 07/14/2015

Prevention of Blast-Related Injuries

Role: Co-Investigator: 5% - \$3,188,362 (2012)

NIH/ 2R01MH065420-05A2 (PI: J Stanley)

01/15/10 – 12/31/14

Assessing development trajectories of the brain biochemistry in ADHD at 4 Tesla.

Role: Co-Investigator: 2.5% - \$511,597 (2012)

Del Harder Rehabilitation Research Support – RIM Foundation (PI: S Mills)

01/01/2013 – 12/31/2015

Rehabilitation Research Support

Role: Principle Investigator: 25% - \$174,114

USED – NIDRR/ H133G130021 (PI: R Hanks)

10/01/2013 – 09/30/2016

Prevention of long-term consequences of mild traumatic brain injury

Role: Co-Investigator: 5% - \$591,330

Previously Funded Grants

Co-Investigator (Statistician): Neuroanatomical correlates of positive psychology among people with traumatic brain injury: A biopsychosocial model. PI: R Hanks; National Institute on Disability and Rehabilitation Research, U. S. Department of Education (H133G080064), 10/01/08 - 09/30/11; \$450,525, 3%.

Project Co-Director & Statistician: Southeastern Michigan Traumatic Brain Injury System. PI: R Hanks; National Institute on Disability and Rehabilitation Research, U. S. Department of Education (133A080044), 10/01/08 - 09/30/11; \$1,569,845, 2%.

Consultant: Stroke Care Delivery and Outcomes: Comparison between JCAHO-certified primary stroke centers and non-certified hospitals; PI: K. Rajamani; Blue Cross Blue Shield; 03/01/08 - 03/01/09; \$83,768, 2%.

Co-Investigator: A new measure of subjective fatigue in persons with traumatic brain injury. PI: T. Bushnik; National Institute on Disability and Rehabilitation Research, U. S. Department of Education (H133G080168), 10/01/08 - 09/30/11; \$124,025, 10%.

Co-Investigator: Functional assessment and treatment of neurogenic hypotension due to spinal cord injury. PI: E. Nieshoff; National Institute on Disability and Rehabilitation Research, U. S. Department of Education (H133G020128-04), 09/01/05 – 08/31/06; \$352,395; 10%.

Co-Investigator: National Institute on Disability and Rehabilitation Research and Centers for Disease Control and Prevention traumatic brain injury data comparability study. PI: J. Corrigan; Centers for Disease Control and Prevention, 09/01/04 – 12/31/05; \$54,080; 2%.

Co-Investigator: Retraining driving skills after spinal cord injury: A virtual reality approach. PI: M. Schultheis; New Jersey Commission on Spinal Cord Research; 06/01/04 – 02/14/05; \$284,514; 3%.

Co-Investigator: Body weight supported training for recovery of walking after stroke. PI: R. Bogey; Ripple Foundation; 01/01/03 – 06/30/03; \$103,050, 3%.

Co-Investigator: Examining the demands of driving in multiple sclerosis. PI: M. Schultheis; National Multiple Sclerosis Society; 10/01/02 – 02/14/05; \$387,841, 4%.

Co-Investigator: Northeast Cognitive Rehabilitation Research Network. PI: J. Whyte; National Institutes of Health, National Institute of Child Health and Human Development (5 R24 HD39621-02), 11/01/01 – 06/30/02; \$118,481, 5%

Statistical Consultant: Relating cognitive dysfunction and functional status in multiple sclerosis; PI: J. DeLuca; National Multiple Sclerosis Society (RG 2596B2/2), 09/30/00 – 08/31/03; \$285,154; 5%.

Co-Director: Northern New Jersey Spinal Cord Injury System. PI: J. DeLisa; National Institute on Disability and Rehabilitation Research, U. S. Department of Education (H133N950013), 01/06/00 – 06/19/00; \$ 1,865,000; 20%.

Associate Director: The Traumatic Brain Injury National Data Center at the Kessler Medical Rehabilitation Research and Education Corporation. PI: M. Rosenthal; National Institute on Disability and Rehabilitation Research, U. S. Department of Education (H133A011403), 07/01/01 – 02/14/05, \$1,740,000, 10%.

Associate Project Director: Southeastern Michigan Traumatic Brain Injury System: A model system of comprehensive care for persons with traumatic brain injury. PI: M. Rosenthal; National Institute on Disability and Rehabilitation Research, U. S. Department of Education (H133A20016), 06/01/99 - 09/27/99; \$1,409,977; 20%.

Principal Investigator: Predictors of health-related quality of life following traumatic brain injury. National Institute on Disability and Rehabilitation Research, U. S. Department of Education (H133A20016), 01/01/98 - 09/27/99.

Clinical Supervisor: Long-term training grant in rehabilitation psychology. PI: M. Rosenthal; Rehabilitation Services Administration, U. S. Department of Education (CFDA 84.129), 09/1/94 - 08/31/97; \$291,000; 5%.

Co-Principal Investigator: Enteral versus parental nutrition support following traumatic brain injury: Rates of infection and neuropsychological outcome. PI: S. Janning; National Institute on

Disability and Rehabilitation Research, U. S. Department of Education (G0087C2022), 01/01/93 - 05/01/94; \$52,255; 5%.

Coordinator: Neuropsychological data collection - Southeastern Michigan Traumatic Brain Injury System: A Model System of Comprehensive Care for Persons with Traumatic Brain Injury. PI: M. Rosenthal; National Institute on Disability and Rehabilitation Research, U. S. Department of Education (G0087C2022 & H133A20016), 01/01/93 – 06/30/99; \$1,813,696; 5%.

Previously Submitted – Not Funded Grants

Co-Investigator: DETROIT COMMUNITY Outreach Network: Minimizing the Gap in Hypertension through Patient Centered Healthcare (DETROIT COMMON GROUND); PI: P Levy; AHRQ

Co-Investigator: Traditional vs. Psychoeducational interventions to prevent long-term consequences of mild TBI; PI: R Hanks; PCORI

Co-Investigator: Biopsychosocial prediction of mild traumatic brain injury outcome; PI: N Silverberg; Canadian Institutes of Health Research

Co-Investigator: TBI mild concussion; PI: R. Hanks; US Department of Defense; 2012.

Co-Investigator: Prevention of long-term consequences of mild traumatic brain injury; PI: R. Hanks; NIDRR; 2012.

Co-Investigator: Southeastern Michigan Traumatic Brain Injury System; PI: R.Hanks; NIDRR; 2012.

Co-Investigator: Southeastern Michigan Spinal Cord Injury System; PI: C. Duggan; NIDRR; 2011.

Co-Investigator: Social competence treatment for traumatic brain injury; PI: C. Felix; NIH R01.

Co-Investigator: Non-conventional multiparametric MRI model for exploratory drug trials in ALS; PI: O. Khan; Muscular Dystrophy Society.

Co-Investigator: Real-world implications for attention, multitasking and neuroplasticity of TBI; PI: L. Hsieh; NIH R01.

Co-Investigator: Establishing MR surrogates of TBI for improved diagnosis and outcomes prediction; PI: M. Haacke; NIH R01.

CLINICAL TRIALS ACTIVITIES

Co-Investigator: Assessment of improvement of motor, sensory, and functional status of chronic Guillain-Barre Syndrome with the use of 4-aminopyridine. PI: E. Nieshoff; Neurorecovery, Inc; 03/01/05 – 12/31/05; \$165,000; 10%.

Co-Investigator: A randomized, double-blind, placebo-controlled study of C105 to improve memory in patients suffering from anterior communicating artery syndrome. PI: R. Bogey; Sention, Inc.; 11/01/02 – 06/30/03; \$57,780, 15%.

Co-Investigator: Relationship between fatigue and endocrine abnormalities post traumatic brain injury. PI: E. Elovic; Pharmacia; 11/01/02 – 10/31/04; \$60,000, 2%.

Co-Investigator: Efficacy of pharmacological treatment of working memory impairment after traumatic brain injury: Evaluation with fMRI. PI: E. Elovic; Cephalon; 08/01/02 – 07/31/04; \$128,387, 2%.

Co-Investigator: A 30-week study to compare the efficacy and safety of Aricept (5mg a day and 10 mg a day) with placebo in the treatment of dementia associated with multiple sclerosis. PI: O. Khan; Pfizer, Inc., 12/98 – 10/99.

Coordinator: Neuropsychological data collection - Randomized, double-blind, placebo-controlled study of intravenous CI-1009 in patients with severe head injury. PI: W. Coplin; Parke-Davis, 05/97 to 01/98.

Coordinator: Neuropsychological data collection - National acute brain injury study: Hypothermia. PI: J. Muizelaar; National Institutes of Health (NS-32786), 7/15/95 - 03/97.

Coordinator: Neuropsychological data collection - Multi-center, randomized, double-blind, parallel group trial comparing the efficacy and safety of multiple bolus injections of 5 mg/kg of Selfotel with placebo in intubated, severe closed traumatic brain injured patients. PI: J Muizelaar; Ciba-Geigy, 5/15/95 - 8/96.

PUBLICATIONS

Peer-Reviewed Publications

1. Reports of Original Work

1. Davis JJ, Millis SR. Examination of Performance Validity Test Failure in Relation to Number of Tests Administered. *Clin Neuropsychol* 2014;28:199-214.
2. Millis SR, Meachen SJ, Griffen JA, Hanks RA, Rapport LJ. Rasch analysis of the community integration measure in persons with traumatic brain injury. *Arch Phys Med Rehabil* 2014;95:734-40.
3. Bhattacharya P, Mada F, Salowich-Palm L, et al. Are Racial Disparities in Stroke Care Still Prevalent in Certified Stroke Centers? *Journal of stroke and cerebrovascular diseases : the official journal of National Stroke Association* 2013;22:383-8.

4. Davis JJ, Axelrod BN, McHugh TS, Hanks RA, Millis SR. Number of impaired scores as a performance validity indicator. *Journal of clinical and experimental neuropsychology* 2013;35:413-20.
5. Hanks RA, Sander AM, Millis SR, Hammond FM, Maestas KL. Changes in sexual functioning from 6 to 12 months following traumatic brain injury: a prospective TBI model system multicenter study. *The Journal of head trauma rehabilitation* 2013;28:179-85.
6. Pellicane AJ, Millis SR. Efficacy of methylprednisolone versus other pharmacologic interventions for the treatment of central post-stroke pain: a retrospective analysis. *Journal of pain research* 2013;6:557-63.
7. Pellicane AJ, Millis SR, Barker KD, et al. The effect of protein and calorie intake on prealbumin, complications, length of stay, and function in the acute rehabilitation inpatient with stroke. *NeuroRehabilitation* 2013;33:367-76.
8. Pellicane AJ, Millis SR, Zimmerman SE, Roth EJ. Calorie and protein intake in acute rehabilitation inpatients with traumatic spinal cord injury versus other diagnoses. *Topics in spinal cord injury rehabilitation* 2013;19:229-35.
9. Rajamani K, Millis S, Watson S, et al. Thrombolysis for acute ischemic stroke in joint commission-certified and -noncertified hospitals in Michigan. *Journal of stroke and cerebrovascular diseases : the official journal of National Stroke Association* 2013;22:49-54.
10. Silverberg ND, Lange RT, Millis SR, et al. Post-concussion symptom reporting after multiple mild traumatic brain injuries. *J Neurotrauma* 2013;30:1398-404.
11. Van Dyke SA, Millis SR, Axelrod BN, Hanks RA. Assessing effort: differentiating performance and symptom validity. *Clin Neuropsychol* 2013;27:1234-46.
12. Williams MW, Rapport LJ, Hanks RA, Millis SR, Greene HA. Incremental validity of neuropsychological evaluations to computed tomography in predicting long-term outcomes after traumatic brain injury. *Clin Neuropsychol* 2013;27:356-75.
13. Davis JJ, Millis SR, Axelrod BN. Derivation of an embedded rey auditory verbal learning test performance validity indicator. *Clin Neuropsychol* 2012;26:1397-408.
14. Gardizi E, Millis SR, Hanks R, Axelrod B. Rasch analysis of the postconcussive symptom questionnaire: measuring the core construct of brain injury symptomatology. *Clin Neuropsychol* 2012;26:869-78.
15. Holcomb EM, Millis SR, Hanks RA. Comorbid disease in persons with traumatic brain injury: descriptive findings using the modified cumulative illness rating scale. *Arch Phys Med Rehabil* 2012;93:1338-42.
16. Johnson SC, Silverberg ND, Millis SR, Hanks RA. Symptom validity indicators embedded in the controlled oral word association test. *Clin Neuropsychol* 2012;26:1230-41.

17. Miller JB, Axelrod BN, Rapport LJ, et al. Parsimonious prediction of Wechsler Memory Scale, Fourth Edition scores: Immediate and delayed memory indexes. *Journal of clinical and experimental neuropsychology* 2012;34:531-42.
18. Nagaraja N, Bhattacharya P, Mada F, et al. Gender based differences in acute stroke care in Michigan hospitals. *J Neurol Sci* 2012;314:88-91.
19. Rhoney DH, Parker D, Jr., Millis SR, Whittaker P. Kidney dysfunction at the time of intracerebral hemorrhage is associated with increased in-hospital mortality: a retrospective observational cohort study. *Neurological research* 2012;34:518-21.
20. Rohling ML, Larrabee GJ, Millis SR. The "Miserable Minority" Following Mild Traumatic Brain Injury: Who Are They and do Meta-Analyses Hide Them? *Clin Neuropsychol* 2012;26:197-213.
21. Bercaw EL, Hanks RA, Millis SR, Gola TJ. Changes in neuropsychological performance after traumatic brain injury from inpatient rehabilitation to 1-year follow-up in predicting 2-year functional outcomes. *Clin Neuropsychol* 2011;25:72-89.
22. Holdnack JA, Zhou X, Larrabee GJ, Millis SR, Salthouse TA. Confirmatory factor analysis of the WAIS-IV/WMS-IV. *Assessment* 2011;18:178-91.
23. Miller JB, Millis SR, Rapport LJ, Bashem JR, Hanks RA, Axelrod BN. Detection of insufficient effort using the advanced clinical solutions for the Wechsler Memory Scale, fourth edition. *Clin Neuropsychol* 2011;25:160-72.
24. Schutte C, Millis S, Axelrod B, Vandyke S. Derivation of a composite measure of embedded symptom validity indices. *Clin Neuropsychol* 2011;25:454-62.
25. Whiteneck GG, Dijkers MP, Heinemann AW, et al. Development of the participation assessment with recombined tools-objective for use after traumatic brain injury. *Arch Phys Med Rehabil* 2011;92:542-51.
26. Kirsch NL, de Leon MB, Maio RF, Millis SR, Tan-Schriner CU, Frederiksen S. Characteristics of a mild head injury subgroup with extreme, persisting distress on the Rivermead Postconcussion Symptoms questionnaire. *Arch Phys Med Rehabil* 2010;91:35-42.
27. Miller JB, Fichtenberg NL, Millis SR. Diagnostic Efficiency of an Ability-Focused Battery. *Clin Neuropsychol* 2010;1-11.
28. Mrazik M, Millis S, Drane DL. The oral trail making test: effects of age and concurrent validity. *Arch Clin Neuropsychol* 2010;25:236-43.
29. Schultheis MT, Weisser V, Ang J, et al. Examining the relationship between cognition and driving performance in multiple sclerosis. *Arch Phys Med Rehabil* 2010;91:465-73.
30. Wolfe PL, Millis SR, Hanks R, Fichtenberg N, Larrabee GJ, Sweet JJ. Effort indicators within the California Verbal Learning Test-II (CVLT-II). *Clin Neuropsychol* 2010;24:153-68.

31. Ylioja S, Hanks R, Baird A, Millis S. Are cognitive outcome and recovery different in civilian penetrating versus non-penetrating brain injuries? *Clin Neuropsychol* 2010;24:1097-112.
32. Boster A, Hreha S, Berger JR, et al. Progressive multifocal leukoencephalopathy and relapsing-remitting multiple sclerosis: a comparative study. *Arch Neurol* 2009;66:593-9.
33. de Leon MB, Kirsch NL, Maio RF, et al. Baseline predictors of fatigue 1 year after mild head injury. *Arch Phys Med Rehabil* 2009;90:956-65.
34. Heilbronner RL, Sweet JJ, Morgan JE, Larrabee GJ, Millis SR. American Academy of Clinical Neuropsychology Consensus Conference Statement on the neuropsychological assessment of effort, response bias, and malingering. *Clin Neuropsychol* 2009;23:1093-129.
35. Iramaneerat C, Smith EV, Jr., Millis SR, Lyden PD. Selecting a measurement model for the analysis of the National Institutes of Health Stroke Scale. *Int J Neurosci* 2009;119:1042-59.
36. Larrabee GJ, Millis SR, Meyers JE. 40 Plus or Minus 10, a New Magical Number: Reply to Russell. *The Clinical Neuropsychologist* 2009;1-9.
37. Millis SR. Methodological challenges in assessment of cognition following mild head injury: response to Malojcic et al. 2008. *J Neurotrauma* 2009;26:2409-10.
38. Randolph C, Millis S, Barr WB, et al. Concussion symptom inventory: an empirically derived scale for monitoring resolution of symptoms following sport-related concussion. *Arch Clin Neuropsychol* 2009;24:219-29.
39. Silverberg ND, Millis SR. Impairment versus deficiency in neuropsychological assessment: Implications for ecological validity. *Journal of the International Neuropsychological Society* 2009;15:94-102.
40. Elovic EP, Brashears A, Kaelin D, et al. Repeated treatments with botulinum toxin type a produce sustained decreases in the limitations associated with focal upper-limb poststroke spasticity for caregivers and patients. *Arch Phys Med Rehabil* 2008;89:799-806.
41. Hanks RA, Millis SR, Ricker JH, et al. The predictive validity of a brief inpatient neuropsychologic battery for persons with traumatic brain injury. *Arch Phys Med Rehabil* 2008;89:950-7.
42. Kashluba S, Hanks RA, Casey JE, Millis SR. Neuropsychologic and functional outcome after complicated mild traumatic brain injury. *Arch Phys Med Rehabil* 2008;89:904-11.
43. Larrabee GJ, Millis SR, Meyers JE. Sensitivity to Brain Dysfunction of the Halstead-Reitan vs an Ability-Focused Neuropsychological Battery. *Clin Neuropsychol* 2008;22:813-25.

44. Meachen SJ, Hanks RA, Millis SR, Rapport LJ. The reliability and validity of the brief symptom inventory-18 in persons with traumatic brain injury. *Arch Phys Med Rehabil* 2008;89:958-65.
45. Silverberg ND, Hanks RA, Buchanan L, Fichtenberg N, Millis SR. Detecting response bias with performance patterns on an expanded version of the Controlled Oral Word Association Test. *The Clinical Neuropsychologist* 2008;22:140-57.
46. Tsanadis J, Montoya E, Hanks RA, Millis SR, Fichtenberg NL, Axelrod BN. Brain injury severity, litigation status, and self-report of postconcussive symptoms. *Clin Neuropsychol* 2008;1:1-13.
47. Benson RR, Meda SA, Vasudevan S, et al. Global white matter analysis of diffusion tensor images is predictive of injury severity in traumatic brain injury. *J Neurotrauma* 2007;24:446-59.
48. Chu BC, Millis S, Arango-Lasprilla JC, Hanks R, Novack T, Hart T. Measuring recovery in new learning and memory following traumatic brain injury: A mixed-effects modeling approach. *Journal of clinical and experimental neuropsychology* 2007;29:617-25.
49. Corrigan JD, Selassie AW, Lineberry LA, et al. Comparison of the Traumatic Brain Injury (TBI) Model Systems national dataset to a population-based cohort of TBI hospitalizations. *Arch Phys Med Rehabil* 2007;88:418-26.
50. Hart T, Hanks R, Bogner J, Millis S, Esselman P. Blame attribution in intentional and unintentional traumatic brain injury: Longitudinal changes and impact on subjective well-being. *Rehabilitation Psychology* 2007;52:152-61.
51. Matheis RJ, Schultheis MT, Tiersky LA, DeLuca J, Millis SR, Rizzo A. Is learning and memory different in a virtual environment? *Clin Neuropsychol* 2007;21:146-61.
52. Millis SR, Straube D, Iramaneerat C, Smith EV, Jr., Lyden P. Measurement properties of the National Institutes of Health Stroke Scale for people with right- and left-hemisphere lesions: further analysis of the clomethiazole for acute stroke study-ischemic (class-I) trial. *Arch Phys Med Rehabil* 2007;88:302-8.
53. Schultheis MT, Rebimbas J, Mourant R, Millis SR. Examining the usability of a virtual reality driving simulator. *Assist Technol* 2007;19:1-8; quiz 9-10.
54. Axelrod BN, Fichtenberg NL, Millis SR, Wertheimer JC. Detecting incomplete effort with Digit Span from the Wechsler Adult Intelligence Scale-Third Edition. *Clin Neuropsychol* 2006;20:513-23.
55. Hart T, Whyte J, Millis S, et al. Dimensions of disordered attention in traumatic brain injury: further validation of the Moss Attention Rating Scale. *Arch Phys Med Rehabil* 2006;87:647-55.
56. Lequerica A, Rapport LJ, Whitman R, et al. Psychometric properties of the Rehabilitation Therapy Engagement Scale in patients with acquired brain injury. *Rehabilitation Psychology* 2006;51:331-7.

57. Ross SR, Putnam SH, Millis SR, Adams KM, Krukowski RA. Detecting insufficient effort using the Seashore Rhythm and Speech-Sounds Perception Tests in head injury. *Clin Neuropsychol* 2006;20:798-815.
58. Simone LK, Schultheis MT, Rebimbas J, Millis SR. Head-mounted displays for clinical virtual reality applications: pitfalls in understanding user behavior while using technology. *Cyberpsychol Behav* 2006;9:591-602.
59. Lehtonen S, Stringer AY, Millis S, et al. Neuropsychological outcome and community re-integration following traumatic brain injury: the impact of frontal and non-frontal lesions. *Brain Inj* 2005;19:239-56.
60. Diab M, Johnston M, Millis S. Relationships between level of disability and receipt of preventive health services. *Archives of Physical Medicine and Rehabilitation* 2004;85:749-57.
61. Johnston MV, Wood K, Millis S, Page S, Chen D. Perceived quality of care and outcomes following spinal cord injury: minority status in the context of multiple predictors. *J Spinal Cord Med* 2004;27:241-51.
62. Kirshblum S, Millis S, McKinley W, Tulsky D. Late neurologic recovery after traumatic spinal cord injury. *Arch Phys Med Rehabil* 2004;85:1811-7.
63. Linsenmeyer TA, Harrison B, Oakley A, Kirshblum S, Stock JA, Millis SR. Evaluation of cranberry supplement for reduction of urinary tract infections in individuals with neurogenic bladders secondary to spinal cord injury. A prospective, double-blinded, placebo-controlled, crossover study. *J Spinal Cord Med* 2004;27:29-34.
64. Linsenmeyer TA, House JG, Millis SR. The role of abnormal congenitally displaced ureteral orifices in causing reflux following spinal cord injury. *J Spinal Cord Med* 2004;27:116-9.
65. Millis SR, Campagnolo DI, Kirshblum S, Elovic E, Jain SS, DeLisa JA. Improving resident research in physical medicine and rehabilitation: impact of a structured training program. *J Spinal Cord Med* 2004;27:428-33.
66. Ross SR, Millis SR, Krukowski RA, Putnam SH, Adams KM. Detecting incomplete effort on the MMPI-2: an examination of the Fake-Bad Scale in mild head injury. *Journal of clinical and experimental neuropsychology* 2004;26:115-24.
67. Savarese R, Diamond M, Elovic E, Millis SR. Intraparotid injection of botulinum toxin A as a treatment to control sialorrhea in children with cerebral palsy. *Am J Phys Med Rehabil* 2004;83:304-11; quiz 12-4, 36.
68. Bush BA, Novack TA, Malec JF, Stringer AY, Millis SR, Madan A. Validation of a model for evaluating outcome after traumatic brain injury. *Arch Phys Med Rehabil* 2003;84:1803-7.

69. Hanks RA, Wood DL, Millis S, et al. Violent traumatic brain injury: occurrence, patient characteristics, and risk factors from the Traumatic Brain Injury Model Systems project. *Arch Phys Med Rehabil* 2003;84:249-54.
70. Hart T, Millis S, Novack T, Englander J, Fidler-Sheppard R, Bell KR. The relationship between neuropsychologic function and level of caregiver supervision at 1 year after traumatic brain injury. *Arch Phys Med Rehabil* 2003;84:221-30.
71. Hart T, Whyte J, Polansky M, et al. Concordance of patient and family report of neurobehavioral symptoms at 1 year after traumatic brain injury. *Arch Phys Med Rehabil* 2003;84:204-13.
72. Hillary FG, Schultheis MT, Challis BH, et al. Spacing of repetitions improves learning and memory after moderate and severe TBI. *Journal of clinical and experimental neuropsychology* 2003;25:49-58.
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2. Invited Review Articles

1. Millis, S.R., [Review of book Statistical methods in neuropsychology: Common procedures made comprehensible, by D. Maroof]. *Archives of clinical neuropsychology*, 2012. 27: p. 813-814.

2. Wilde, E.A., et al., Recommendations for the use of common outcome measures in traumatic brain injury research. *Arch Phys Med Rehabil*, 2010. 91(11): p. 1650-1660 e17.
3. Heilbronner, R.L., et al., American Academy of Clinical Neuropsychology Consensus Conference Statement on the neuropsychological assessment of effort, response bias, and malingering. *Clin Neuropsychol*, 2009. 23(7): p. 1093-129.
4. Millis, S., Filling the void? Rehabilitating traumatic brain injury. *Journal of Clinical and Experimental Neuropsychology*, 1996. 18: p. 768-771.
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6. Bergquist, T., et al., Neuropsychological rehabilitation: Proceedings of a consensus conferences. *Journal of Head Trauma Rehabilitation*, 1994. 9(4): p. 50-61.
7. Putnam, S. and S. Millis, Psychosocial factors in the development and maintenance of chronic somatic and functional symptoms following traumatic brain injury. *Advances in Medical Psychotherapy*, 1994. 7: p. 1-22.
8. Rosenthal, M. and S. Millis, Relating neuropsychological indicators to psychosocial outcome after traumatic brain injury. *Neurorehabilitation*, 1992. 2: p. 1-8.

Letters to the Editor

1. Millis SR. Methodological challenges in assessment of cognition following mild head injury: response to Malojcic et al. 2008. *J Neurotrauma*. 2009 Dec;26(12):2409-10.

Book Chapters

1. Millis, S., What clinicians really need to know about symptom exaggeration, insufficient effort, and malingering: Statistical and measurement matters, in *The neuropsychology of malingering casebook*, J. Sweet and J. Morgan, Editors. 2009, Psychology Press / Taylor & Francis: New York. p. 21-37.
2. Millis, S., Assessment of incomplete effort and malingering in the neuropsychological examination, in *Textbook of Clinical Neuropsychology*, J. Morgan and J. Ricker, Editors. 2008, Psychology Press / Taylor & Francis: New York. p. 891-904.
3. DeLisa, J., S. Millis, and B. Gans, Research in physical medicine and rehabilitation, in *Physical medicine and rehabilitation: Principles and practice*, J. DeLisa, B. Gans, and N. Walsh, Editors. 2005, Lippincott, Williams & Wilkins: Philadelphia. p. 1109-1120.
4. Hanks, R., J. Ricker, and S. Millis, Empirical evidence regarding the neuropsychological assessment of moderate and severe traumatic brain injury, in *Differential diagnosis in adult*

neuropsychological assessment, J. Ricker, Editor. 2004, Springer Publishing Company, Inc.: New York. p. 218-242.

5. Millis, S., Evaluation of malingered neurocognitive disorders, in Principles and practice of behavioral neurology and neuropsychology, M. Rizzo and P. Eslinger, Editors. 2004, W. B. Saunders: Philadelphia. p. 1077-1089.
6. Millis, S., Warrington's Recognition Memory Test in the detection of response bias, in Detection of response bias in forensic neuropsychology J. Hom and R. Denny, Editors. 2002, Haworth Press: Binghamton, NY. p. 147-166.
7. Rosenthal, M. and S. Millis, Neuropsychological indicators of psychosocial outcome, in Outcome after head, neck, and spinal trauma: A medico-legal guide, R. Macfarlane and D. Hardy, Editors. 1997, Butterworth-Heinemann: Oxford, United Kingdom. p. 91-97.
8. Millis, S. and S. Putnam, Detection of malingering in postconcussive syndrome, in Head injury and postconcussive syndrome M. Rizzo and D. Tranel, Editors. 1996, Churchill Livingstone: New York: . p. 481-498.
9. Putnam, S., S. Millis, and K. Adams, Mild traumatic brain injury: Beyond cognitive assessment. , in Neuropsychological assessment of neuropsychiatric disorders I. Grant and K. Adams, Editors. 1996, Oxford University Press: New York. p. 529-551.

Published Abstracts (last 5 years)

1. Ayaz SI, Thomas C, Mika V, Medado P, Robinson D, Millis S, Pearson C, Prichep L, O'Neil BJ. (2013). Comparison of Quantitative EEG With Current Clinical Decision Rules for Head CT Utilization in Acute Mild Traumatic Brain Injury in the Emergency Department. Annals of Emergency Medicine, 62 (4S), S27-S28.
2. Mika V, Ayaz S, Robinson D, Medado P, Pearson C, Millis S, O'Neil, B. (2012). Utility of Hand-held EEG Device in Predicting Post-concussion Syndrome in Patients With Closed Head Injury. Annals of Emergency Medicine, 60 (4S), S58.
3. Pearson C, Ayaz S, Mika V, Robinson D, Medado P, Millis S, O'Neil B. (2012). The Predictive Value of a Hand-held EEG Acquisition Device in Patients With Closed Head Injury. Annals of Emergency Medicine, 60 (4S), S94.
4. Vidri B, Ayaz S, Medado P, Millis, S, O'Neil B. (2012). Early Predictors of Post-Concussive Syndrome in Mild Traumatic Brain Injuries Presenting to the ED. Academic Emergency Medicine, 19 (S1), S46.

5. Meachen S, Griffen J, Millis S, Hanks R. (2009). Rasch Analysis of the Community Integration Measure (CIM) in TBI Survivors. Archives of Physical Medicine and Rehabilitation, 90 (10).

INVITED LECTURES & PRESENTATIONS

Invited/refereed at international/national meetings (last 5 years)

1. Millis, S. R. (2009, February). Advanced longitudinal data analysis. Workshop presented at the 37th Annual Meeting of the International Neuropsychological Society, Atlanta, Ga.
2. Millis, S. R. (2009, February). Introduction to analysis of longitudinal data. Workshop presented at the 37th Annual Meeting of the International Neuropsychological Society, Atlanta, Ga.
3. Meachen, S., Griffen, J., Millis, S., Hanks, R. (2009, October). Rasch Analysis of the Community Integration Measure (CIM) in TBI Survivors. Paper presented at the annual meeting of the American Congress of Rehabilitation Medicine, Denver, Co.
4. Millis, S. R. (2008, February). Linear mixed Models: measuring change. Symposium presented at the 36th Annual Meeting of the International Neuropsychological Society, Kona, Hawaii.
5. Millis, S. R. (2008, June). Evidence-based assessment and research interpretation. Workshop presented at the 6th Annual Conference of the American Academy of Clinical Neuropsychology, Boston, MA.
6. Rhoney, D., Parker, D., Millis, S., Wood, T., Niemiec, T., & Whitaker, P. (2008, October). Renal dysfunction is associated with increased mortality after intracerebral hemorrhage. Poster presented at the 6th Annual Meeting of the Neurocritical Care Society, Miami, FL.

Invited/refereed at local/regional meetings (last 5 years)

1. Millis, S. R. (2012, April). Hot topics in social and behavioral research. Workshop presented at the Michigan Research Ethics Conference, Grand Rapids, MI.
2. Millis, S. R. (2010, January). Statisticians behaving badly: Common statistical errors and how to avoid them. Paper presented to the Detroit Chapter – American Statistical Association, Detroit, MI.

3. Millis, S. R. (2010, April). Statisticians behaving badly: Common statistical errors and how to avoid them. Paper presented to the Department of Physical Medicine & Rehabilitation, University of Michigan, Ann Arbor, MI.
4. Millis, S. R. (2010, May). Statisticians behaving badly: Common statistical errors and how to avoid them. Paper presented to Neuropsychology Department, Henry Ford Health System, Detroit, MI.
5. Millis, S. R. (2009, March). An introduction to Bayesian Model Averaging. Colloquium Series, University of Windsor, Department of Mathematics and Statistics, Windsor, Ontario, CA.
6. Millis, S. R. (2009, March). Traumatic brain injury and maledictory neurocognitive disorders. Didactic presented to the Psychology Internship program at Henry Ford Health System, Detroit, MI.
7. Millis, S. R. (2009, May). War, enmity, and the origin of $p < .05$. Paper presented at the 15th Annual Del Harder Rehabilitation Research Day, Detroit Medical Center, Detroit, MI.
8. Millis, S. R. (2008, January). Model selection in generalized linear models: Alternatives to stepwise variable selection. Workshop presented at the Advanced Rehabilitation Research Training Program, University of Michigan, Ann Arbor, MI.
9. Millis, S. R. (2008, March). Traumatic brain injury and maledictory neurocognitive disorders. Didactic presented to the Psychology Internship program at Henry Ford Health System, Detroit, MI.
10. Millis, S. R. (2008, September). An introduction to Bayesian Model Averaging. Presentation made to the Detroit Chapter – American Statistical Association, Rochester Hills, MI.